

WHAT IS CLAIMED IS:

5 1. A composition comprising a matrix-forming component and a non-cyanoacrylate rheology modifying agent, wherein the matrix-forming component comprises alkyl cyanoacrylate monomers, a stabilizer, and a plasticizer.

10 2. The composition of claim 1, further comprising a solid aggregate material, wherein the solid aggregate material comprises a radiopacifier.

15 3. The composition of claim 1, wherein the non-cyanoacrylate rheology modifying agent is selected from the group consisting of a polymer, inorganic particulate material, and a mixture thereof.

20 4. The composition of claim 1, wherein the non-cyanoacrylate rheology modifying agent is a polymer or copolymer compound soluble in the alkyl cyanoacrylate monomers or in the plasticizer.

25 5. The composition of claim 1, wherein the non-cyanoacrylate rheology modifying agent is a polymeric compound selected from the group consisting of poly(acrylates), poly(alkenes), poly(alkyl oxides), poly(amides), poly(carbonates), cellulosic polymers and copolymers, poly(dienes), poly(esters), poly(methacrylates), poly(saccharides), poly(siloxanes), poly(styrenes), poly(urethanes), poly(vinyl ethers), poly(vinyl esters), polymers and copolymers having high iodine content, and mixtures thereof.

5 6. The composition of claim 1, wherein the non-cyanoacrylate rheology modifying agent is an inorganic particulate material selected from the group consisting of fumed silica, silicatious earth, bentonite, and mixtures thereof.

10 7. The composition of claim 1, wherein the non-cyanoacrylate rheology modifying agent is a polymer having a molecular weight of at least 75,000.

15 8. The composition of claim 1, wherein the non-cyanoacrylate rheology modifying agent is a polymer having a molecular weight of at least 200,000.

20 9. The composition of claim 1, wherein the non-cyanoacrylate rheology modifying agent and the plasticizer is the same material.

25 10. The composition of claim 1, wherein the non-cyanoacrylate rheology modifying agent is a polymer comprising about 0% to about 10%, by weight of the matrix-forming components.

30 11. The composition of claim 1, wherein the non-cyanoacrylate rheology modifying agent is a polymer comprising about 1% to about 5%, by weight of the matrix-forming components.

35 12. The composition of claim 2, wherein the non-cyanoacrylate rheology modifying agent is a particulate material comprising about 0% to about 75%, by volume of the solid-aggregate materials.

13. The composition of claim 2, wherein the non-cyanoacrylate rheology modifying agent is a particulate material comprising about 0% to about 40%, by volume of the solid-aggregate materials.

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10 14. The composition of claim 2, wherein the non-cyanoacrylate rheology modifying agent comprises inorganic particles with surface-modifying molecules adsorbed to or bonded to the surfaces of said particles for improving the stability of a suspension of said particles within said composition.

15 15. The composition of claim 1, wherein the alkyl cyanoacrylate monomer is a compound of the formula H₂C=C(CN)-C(O)OR, wherein R is an alkyl group of about 1 to about 18 carbons.

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16. The composition of claim 13, wherein the group represented by R is an alkyl group of about 4 to about 10 carbons.

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17. The composition of claim 1, wherein the alkyl cyanoacrylate monomer is present in an amount of from about 20% to about 75%, by weight of the matrix-forming component.

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18. The composition of claim 1, wherein the alkyl cyanoacrylate monomer is present in an amount of from about 30% to about 70%, by weight of the matrix-forming component.

19. The composition of claim 1, wherein the stabilizer is an inorganic acid, an organic acid, a free

radical inhibitor, an antioxidant, or a mixture thereof.

5 20. The composition of claim 1, wherein the stabilizer is present in an amount of from about 50 ppm to about 500 ppm.

10 21. The composition of claim 2, wherein the radiopacifier is selected from the group consisting of Ta, TaO, Au, Pt, Zr, ZrO, bismuth subcarbonate, and barium sulfate.

15 22. The composition of claim 2, wherein the radiopacifier comprises radio-opaque particles with surface-modifying molecules adsorbed to or bonded to the surfaces of said particles for improving the stability of a suspension of said particles within said composition.

20 23. The composition of claim 2, wherein the radiopacifier is about 25% to about 100%, by volume of the solid-aggregate material.

25 24. The composition of claim 2, wherein the radiopacifier is about 60% to about 100%, by volume of the solid-aggregate material.

30 25. The composition of claim 1, wherein the plasticizer is selected from the group consisting of organic esters containing 10 or more carbon atoms and polymeric compounds having a glass transition temperature less than 20°C.

26. The composition of claim 1, wherein the plasticizer is selected from the group consisting of

aromatic esters, alkyl esters, phthalate esters, citrate esters, glycerol esters, plant derived oils, animal derived oils, silicone oils, iodinated oils, vitamins A, C, E, and acetates and esters thereof, and mixtures thereof.

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27. The composition of claim 1, wherein the plasticizer is about 10% to about 75%, by weight of the matrix-forming component.

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28. The composition of claim 1, wherein the plasticizer is about 30% to about 60%, by weight of the matrix-forming component.

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29. A method of tissue bulking, filling, occluding or administering an embolic composition, comprising the steps of:

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a) providing alkyl cyanoacrylate monomers, a stabilizer, a plasticizer, a non-cyanoacrylate rheology modifying agent, and optionally a radiopacifier;

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b) mixing each component provided in step a) to form an embolic composition; and

c) contacting the embolic composition with an ionic environment to render a solidified composition upon contact.

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30. The method of claim 29, wherein the embolic composition has an apparent viscosity of about 25 cP to about 2000 cP.

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31. The method of claim 29, wherein the embolic composition has an apparent viscosity of about 100 cP to about 300 cP.

32. The method of claim 29, wherein the embolic composition demonstrates thixotropic, pseudo-plastic, or plastic behavior.

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33. The method of claim 29, wherein the solidified composition is hydrolytically stable.

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34. A method of embolizing a vascular space, comprising the steps of:

- a) providing alkyl cyanoacrylate monomers, a stabilizer, a plasticizer, a non-cyanoacrylate rheology modifying agent, and optionally a radiopacifier;
- b) mixing each component provided in step a) to form an embolic composition; and
- c) administering the embolic composition into a vascular space in a patient in a manner that contacts the composition with the blood of the patient.

35. The method of claim 34, wherein the vascular space is an arteriovenous malformation, an aneurysm, a fistula, or a tumor.

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36. The method of claim 34, wherein the step of administering the embolic composition stabilizes or mitigates rupture of an aneurysm.

37. The method of claim 36, wherein the aneurysm is a brain aneurysm.